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Imaging

UTILITY OF PARAMETRIC IMAGING TO IDENTIFY MYOCARDIAL RISK AREA BY AREA CHANGE RATE IN 3D ADENOSINE-STRESS ECHOCARDIOGRAPHY

Poster Contributions
Poster Sessions, Expo North
Sunday, March 10, 2013, 3:45 p.m.-4:30 p.m.

Session Title: Imaging: Echocardiographic Imaging of Patients with CAD: II
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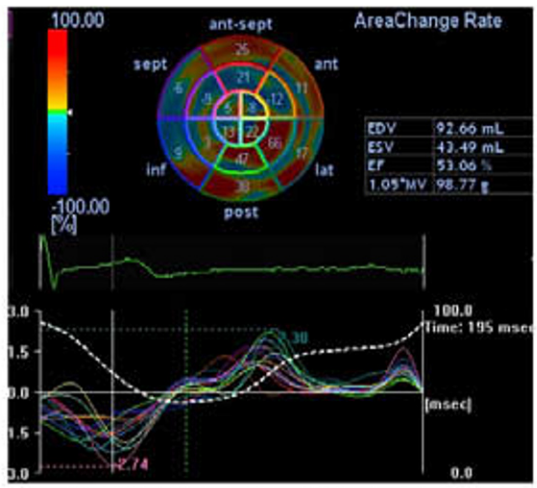
Background: We investigated whether change of area change rate (ACR) in 3D adenosine-stress echocardiography is possible to identify myocardial risk area.

Methods: Nine patients underwent 3D adenosine-stress echocardiography and adenosine-stress 99mTc scintigraphy simultaneously to assess myocardial ischemia. Three-dimensional full volume images were acquired (Artia TM, Toshiba) at rest and during adenosine infusion. We assessed total 54 mid wall segments by 3D echocardiography, and calculated the change of the peak systolic ACR (max-ACRs) and early diastolic ACR (max-ACRe) from rest to during hyperemia. Finally, the parametric imaging of the change of ACR compared to the finding of myocardial perfusion scintigraphy as reference.

Results: The changes of max-ACRs and ACRe were significantly decreased in ischemic segments compared to non-ischemic segments (max-ACRs: -5.8±17.1 vs 0.45±0.50, P<0.001; max-ACRe: -0.12±0.34 vs 0.93±1.36, P<0.001). By ROC analysis, the utility of diagnosis for ischemia by change of max-ACRe (AUC 0.884, sensitivity 81.4%, specificity 81.8%)was higher than that of max-ACRs (AUC 0.851, sensitivity 86.0%, specificity 72.7%). In addition, the parametric imaging of the change of max-ACRe was possible to detect the risk area (Figure).

Conclusions: The parametric imaging of change of max-ACRe is useful to identify the adenosine-induced ischemia by 3D stress-echocardiography in ischemic heart disease.



Parametric imaging of change of max-ACRe in patients with ischemia on LAD area